

Documenting species and sites through bird inventories

By Carol Beidleman with Nikki Guldager, Stephen Fettig, David Mizrahi, and Robert Kuntz

BIOLOGICAL INVENTORIES are a critical first step in effective management of park resources. Protecting species that do not use national park habitats throughout the year, such as migratory birds, presents a special challenge. Given the decline in migratory bird populations, documenting their presence and use of park habitats is important for ensuring the survival of these species.

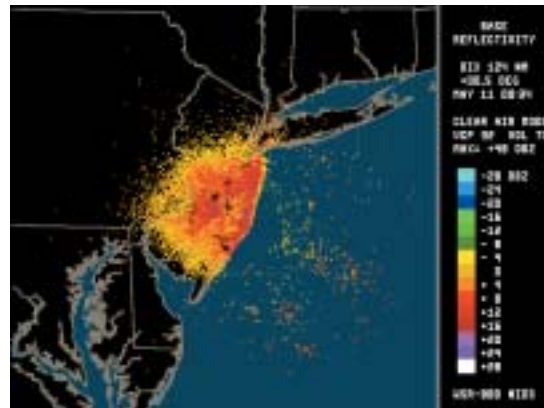
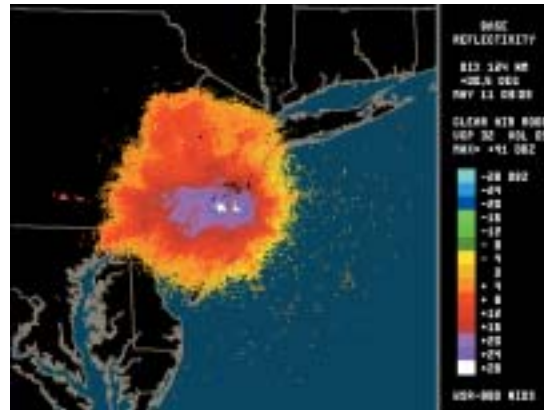
Bird inventories are 1 of 12 core inventories being conducted in approximately 270 parks with significant natural resources. The goal of these inventories is to document 90% of the species that occur in the parks, to document abundance and distribution for selected groups of high-priority species, and to form the basis for developing effective long-term monitoring programs for these species.

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Inventory efforts may focus on species or sites used by species. Several examples come from the Park Flight Migratory Bird Program, which works to protect migratory bird species and their habitats in U.S. and Latin American national parks and protected areas through bird conservation and education projects and technical exchange.

In Gates of the Arctic National Park and Preserve (Alaska, photo, page 46), the Park Flight Program and the National Park Service Inventory and Monitoring Program provided support to conduct land bird and shorebird inventories. Gates of the Arctic includes 8.2 million acres (3.3 million hectares) in the central Brooks Range, an extensive and largely unsurveyed landscape with important nesting habitat for numerous migratory bird species. At the park level, baseline information can be used to assess impacts of potential management issues and natural disturbances on species distribution and habitat. Inventory data will also be incorporated into the statewide bird monitoring program developed by Partners in Flight, which focuses on regional trends in population abundance and distribution throughout Alaska. At the global level, many migratory species face widespread loss of habitat in critical feeding and staging areas along migration routes and in wintering areas, and impacts of these threats may be detected first through changes in bird abundance and distribution on breeding grounds. Data from the shorebird inventories, which are conducted by the Alaska Science Center, will be shared with a new Park Flight project in Argentina where some of these species winter.

In New Mexico, a Park Flight project conducted a species inventory through participation in a statewide Breeding Bird Atlas. This project, involving Bandelier, Aztec Ruins, Capulin Volcano, and Fort Union National Monuments, and Pecos National Historical Park,



The New Jersey Audubon Society is using an innovative approach for monitoring stopover areas used by nocturnally migrating songbirds. Every night during spring and fall migration they evaluate National Weather Service Doppler radar (NEXRAD) data to determine if a migration is under way. If it is (top image, made May 10, 2001, at 11:03 p.m. EDT), then they examine data collected as migrants depart on the same evening (bottom image, made about three hours earlier), to determine areas they occupied before their exodus. By identifying these sites, the society can recommend land acquisition priorities or encourage conservation practices where other land uses might prevail.

is a reminder that national park units established to protect cultural resources still have natural resource management responsibilities and play an important role in the conservation of migratory birds. Breeding Bird Atlas information, which documents breeding status, is a key component in basic understanding of ranges and trends of breeding birds and a key building block in any statewide bird conservation effort. Including national park areas in an atlas is critical for evaluating potential causes for bird population trends, because changes to parklands are often minor compared with development or habitat destruction on nonpark lands.

Another Park Flight project, at the New Jersey Coastal Heritage Trail Route, focuses on developing an inventory of important migratory bird stopover sites. This unit works through partners, such as the New Jersey Audubon Society, to promote resource awareness

Wildlife Biologist and Park Flight Manager Nikki Guldager surveys birds during an inventory in the Killik River area of Gates of the Arctic National Park and Preserve, Alaska. The goal of the inventories is to assess avian species diversity, density, and habitat within the park and to develop a monitoring plan.



and protection. New Jersey is a major thoroughfare for large numbers of Neotropical songbirds during spring and fall migration. The availability of suitable stopover habitats that provide the food resources necessary for birds to accumulate energy quickly and safely is essential. National Weather Service Doppler radar is an effective approach for identifying stopover habitats (see image pair, page 45) because it can monitor bird movements at spatial and temporal scales and provide information about site-use frequency and bird density at particular sites. Combining radar data with land-use and land-cover data in a Geographic Information System leads to determining the use of specific habitat types by migratory birds during stopovers. This information is crucial for ranking the importance of particular sites and for making sound land management decisions regarding the conservation of habitats used by songbirds during migration stopovers.

A different kind of migratory bird site inventory has taken place at North Cascades National Park (Washington) as part of a broader regional effort. Here the focus was on the black swift, a species that is not effectively surveyed by standardized approaches for broad-scale landscape- or habitat-based monitoring, such as the roadside Breeding Bird Survey. The black swift is a Partners in Flight Continental Watch List Species, a priority species in the Northern Pacific Rainforest Bird Conservation Region, and a priority species in Bird Conservation Plans for Oregon, Washington, British

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Columbia, and Alaska. Prior to this project, no survey of this species had ever been conducted in the Cascade Range of British Columbia and Washington. Because black swifts breed on steep canyon walls close to waterfalls, a special protocol is required to determine their distribution and abundance. Roberto Quintero-Dominguez, a Park Flight international intern from Mexico, was part of a team of NPS employees and North Cascades Institute graduate students who conducted these physically challenging inventories of selected waterfalls in North Cascades. The high percentage of swifts observed at waterfalls and the large number counted on individual surveys suggest that falls within the park are extremely important nesting habitat for this species. ■

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Understanding land bird diversity in the Klamath region

By Daniel A. Sarr, Nat Seavy, John D. Alexander, and Paul Hosten

What drives bird diversity in the Klamath region in the Northwest? Scientists are learning that fundamental conservation questions such as this often must be addressed through landscape-scale analyses. Therefore, network Inventory and Monitoring programs, other federal agencies, and nonprofit conservation organizations are partnering to consider regional needs through development of consistent inventory data sets across park and agency boundaries. For example, scientists who analyzed data collected during field inventories of land birds in



Yellow-rumped warbler, a species that prefers high elevations, is abundant at Crater Lake National Park (high elevation), less common in Cascade-Siskiyou National Monument (middle elevation), and nearly absent from Whiskeytown National Recreation Area (low to middle elevation).

three federal conservation preserves believe environmental conditions, such as climate and habitat, may be important drivers of bird diversity patterns in the Klamath region.

In 2003, scientists from the National Park Service (NPS) Inventory and Monitoring Program, the Bureau of Land Management (BLM), and the nonprofit Klamath Bird Observatory jointly studied bird diversity in Crater Lake National Park, Oregon (administered by NPS); Cascade-Siskiyou National Monument, Oregon (BLM); and Whiskeytown National Recreation Area, California (NPS). Crater Lake National Park, which has diverse and pristine habitat but a cool climate, supported a lower diversity of birds (38 species recorded) than the warmer, lower-elevation parks. Whiskeytown National Recreation Area, the lowest, warmest preserve, however, was apparently no richer in species than Cascade-Siskiyou National Monument, which occupies intermediate elevations (70 vs. 78 bird species recorded, respectively).

Cascade-Siskiyou straddles the crest of the Cascade Range and has exceptional variability in climate and vegetation, which may explain its high bird diversity. Most bird species showed peak abundance in either Crater Lake or Whiskeytown, suggesting that many bird species have preferences for either high or low elevations during their breeding season. However, each of the three preserves supports distinctive and complementary bird species, suggesting they play different roles in the conservation of regional land bird diversity. ■

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